

C L A I M S

[1] An electrolytic apparatus for use in an oxide electrowinning method, said apparatus comprising a plurality of anodes different from each other in shape and arrangement and at least one common cathode installed in an electrolytic vessel, wherein a pair of one of the anodes and the cathode is used for main electrolysis and a pair of the one or more remaining anodes and the cathode is used for auxiliary electrolysis.

[2] An electrolytic apparatus for use in an oxide electrowinning method, said apparatus comprising an annular electrolytic vessel made of a metallic material and designed in consideration of criticality control with geometrical control, a high frequency induction coil for heating a substance to be processed in said electrolytic vessel, an annular anode installed at the bottom of an annular space formed in the annular electrolytic vessel, and rod-shaped anodes and rod-shaped cathodes installed along the axial direction in the annular space, wherein a parallel pair of the rod-shaped anodes and the rod-shaped cathodes arranged in parallel or a vertical pair of the annular anode and the rod-shaped cathodes arranged vertically is used for main electrolysis and the other of the pairs is used for auxiliary electrolysis.

[3] The electrolytic apparatus for use in an oxide electrowinning method according to claim 2, wherein the rod-

shaped cathodes are supported rotatably and a rotation driving mechanism is additionally installed.

[4] A spent nuclear fuel reprocessing method with an oxide electrowinning method by using the electrolytic apparatus according to claim 2 or 3, wherein the substance to be processed in the annular electrolytic vessel is a molten salt dissolving the spent nuclear fuel, and wherein in a simultaneous electrolytic step in which uranium oxide contained in the spent nuclear fuel is dissolved into the molten salt by anodic oxidation reaction and simultaneously recovered as uranium oxide electrodeposition on the surface of the cathode by cathodic reduction reaction, the vertical pair of the electrodes is used for main electrolysis in which uranium oxide is dissolved and deposited by electrochemical reaction, and the parallel pair of the electrodes is used for auxiliary electrolysis whose role is to suppress the ununiform uranium oxide electrodeposition; and in a MOX recovery step in which the oxides of uranium and plutonium are deposited and recovered in a mixed state, the parallel pair of the electrodes is used for main electrolysis in which MOX is deposited, and the vertical pair of the electrodes is used for auxiliary electrolysis whose role is to dissolve the electrodeposit fallen down from the cathodes.